OPERATOR'S MANUAL UV-R01

INCLUDES OPERATION, MAINTENANCE AND TROUBLESHOOTING GUIDES

LAST MODIFIED 21/03/2004
v1.0

UV INK PUMP & RAM SYSTEM

AIR OPERATED VARIABLE MIX AND DISPENSE SYSTEM

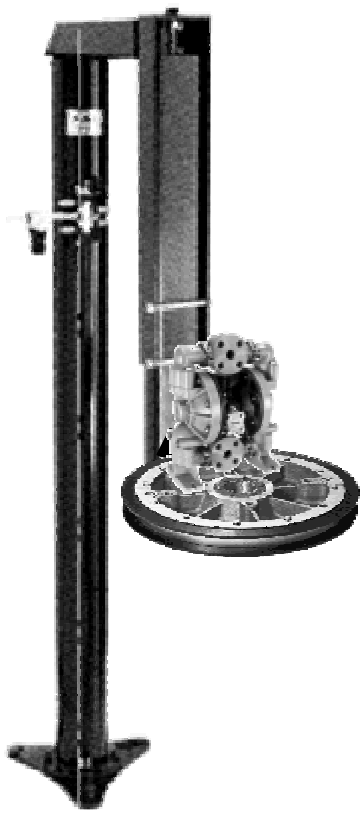
PLEASE READ THIS MANUAL CAREFULLY BEFORE OPERATING, ADJUSTING OR SERVICING THIS EQUIPMENT

It is the responsibility of the employer to place this information in the hands of the operator. Keep for future reference.

GENERAL SYSTEM DATA

Ram Type	1:1 ratio Air-operated Single Post Piston Lift & Ram. Welded and bolted construction, Powder Coated finish.
Ram System Materials	Steel / Aluminium.
Pump Type	Non-metallic Air-operated Double Diaphragm.
Pump Model	ARO 1:1 ratio Pump.
Pump Materials	UV Stabilised Polypropylene.
Max. Air Inlet Pres. (pump)	120 psig (8.3 bar)
Min. Air Inlet Pres. (pump)	20 psig (1.4 bar)
Max. inlet Pressure (ram)	10 psig (0.69 bar)
Variable Flow Rate	To individuals requirement.
Max. Temp. Limits	35º - 150º F (2º - 66º C)
General Dimensions	100" x 39⅜" x 29½" (2540 x 1000 x 750mm).
Noise Levels @ 70psi	64.5 db(A) * +

* The pump sound pressure levels published here have been updated to an Equivalent Continuous Sound Level (L_{aeq}) to meet the intent of ANSI S1.13-1971, CAGI-PNEUROPS5.1 using four microphones
+ Tested with 93110 Muffler installed.



UV-R01

GENERAL DESCRIPTION

The UV Ink Pump & Ram System allows for the safe transfer and accurate dispensing of ultra-violet and light sensitive fluid products.

The system is a total pneumatic package utilising a diaphragm pump for the transfer of ink. Ink is dispensed via a spring return valve within a closed loop dispensing circuit.

The system is integrated into a floor plate design package (free standing) and is suitable for all environments. The system has been designed to work with 205 litre drums, of any design.

Easy to install, easy to operate, maintenance free, and full global support available.

AIR PUMPING ENGINEERING SERVICES LIMITED
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PUMP OPERATING & SAFETY PRECAUTIONS

PLEASE READ AND FOLLOW THIS INFORMATION TO AVOID PERSONAL INJURY AND PROPERTY DAMAGE

WARNING!

Excessive Air Pressure can cause personal injury, pump damage or property damage.

DO NOT exceed the maximum inlet air pressure as stated.

STATIC SPARK. Can cause explosion resulting in severe injury or death. Ground pump and system.

The pumping system and object being sprayed must be grounded when it is pumping, flushing, re-circulating or spraying flammable materials such as paints, solvents, lacquers, etc. or used in a location where the surrounding atmosphere is conductive to spontaneous combustion. Ground the dispensing valve or device, containers, hoses and any object to which material is being pumped.

Secure pump, connections and all contact points to avoid vibration and generation of contact or static spark.

After grounding periodically verify continuity of electrical path to ground. Test using an Ohmmeter, should show 100 ohms or less.

Use hoses incorporating a static wire.

Use proper ventilation and keep containers closed when not in use.

WARNING!

Pump exhaust may contain contaminants. Can cause severe injury. Pipe exhaust away from work area and personnel.

In the event of a diaphragm rupture, material can be forced out of the air exhaust muffler.

Do not service or clean pump, hoses or dispensing valve while the system is pressurised.

Disconnect air supply line and relieve pressure from the system by opening dispensing valve or carefully removing outlet hose or piping.

WARNING!

HAZARDOUS MATERIALS. Do not attempt to return a pump to the factory or service centre that contains hazardous material. Safe handling practices must comply with local and national laws and safety code requirements.

Obtain Material Safety Datasheets on all materials from the supplier for proper handling instructions.

CAUTION!

Chemical compatibility may change with temperature and concentration.

Maximum temperatures are based on mechanical stress only.

Certain chemicals will significantly reduce maximum safe operating temperature.

Be certain all operators of this equipment have been trained for safe working practices, understand it's limitations, and wear safety goggles / equipment where required.

CAUTION!

Prevent unnecessary damage to the pump. Do not allow the pump to operate when out of material for long periods of time.,

Disconnect air line from pump when system sits idle for long periods of time.

WARNING!	**Hazards or unsafe practises which could result in severe personal injury, death or substantial property damage**
CAUTION!	**Hazards or unsafe practises which could result in minor personal injury, product or property damage**

PLEASE READ AND FOLLOW THIS INFORMATION TO AVOID PERSONAL INJURY AND PROPERTY DAMAGE

WARNING!

ANCHOR THE LIFT BASE SECURLY ON A FLAT SURFACE. AN IMPROPERLY SECURED LIFT IS UNSAFE. Do not attempt to use the lift until all possible measures have been taken to insure that the lift has been properly installed and the base is securely fastened.

PREVENT ELECTRIC SHOCK. Be certain the area above the lift is clear of electrical fixtures, devices and wiring. Examine the working area and take necessary action to assure adequate clearance for the lift and pump assembly to raise the fullest limit and function properly.

WARNING!

PINCH HAZARD. Follower can descend quickly, causing injury. Keep hands clear when aligning with container. Do not rotate the pump to the next drum by grasping the follower plate. In the raising and lowering function, the speed is controlled by Exhaust Speed Controls. In a situation where the lift could get hung up or the descent is restricted temporarily, the lift could in some situations drop rapidly and be hazardous. If the follower plate does not enter the drum properly; DO NOT ATTEMPT TO REPOSITION IT WITH YOUR HANDS; raise the lift and re-start.

WARNING!

STAND CLEAR. When raising or lowering the lift, it is good safety practice to stay clear of the raised lift and operate it from a safe position.

HAZARDOUS PRESSURE. Do not exceed maximum air pressure of 150 psi (10.3 bar). Operating lift at higher pressure may cause lift damage and / or personal injury and / or property damage.

Do not service or clean pump, hoses or dispensing valve while system is pressurised.

Know the pressure limitations of the drum and regulate the air pressure within safe limit when supplying air to follower plate.

CAUTION!

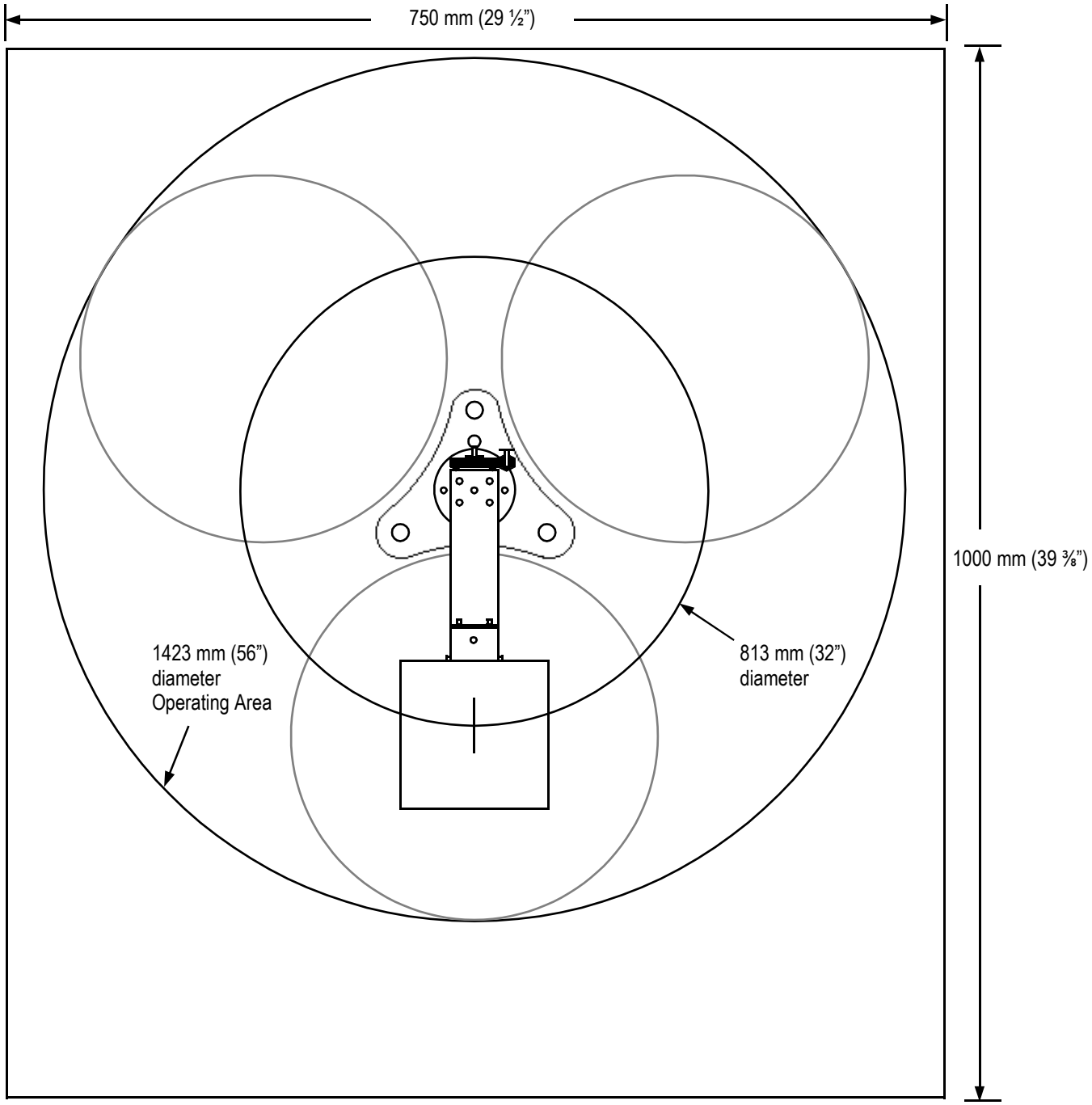
Be certain all operators of this equipment have been trained for safe working practices, understand it's limitations, and wear their safety goggles / equipment as required.

WARNING!	**Hazards or unsafe practises which could result in severe personal injury, death or substantial property damage**
CAUTION!	**Hazards or unsafe practises which could result in minor personal injury, product or property damage**

OPERATIONAL AREA

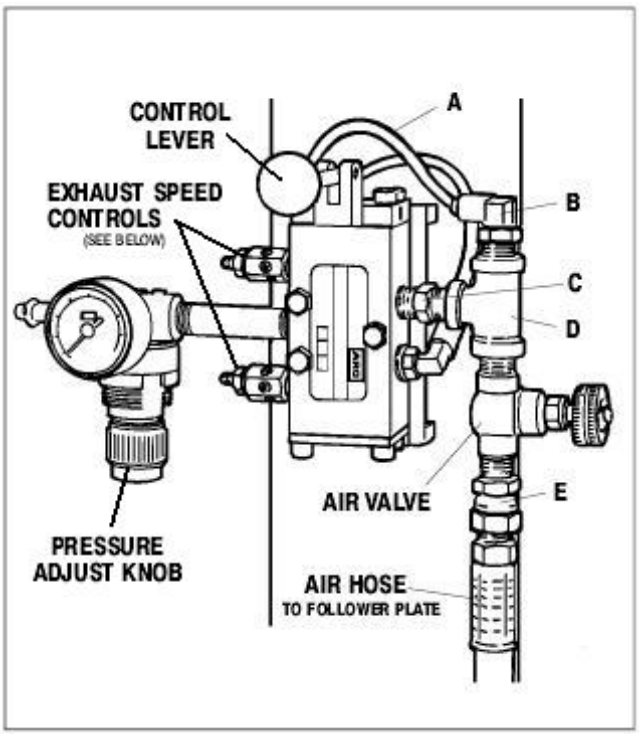
DIMENSIONS SHOWN ARE FOR GUIDANCE ONLY AND ARE DISPLAYED IN MILIMETRES AND (INCHES)

When installing the system, please ensure an adequate operating area is maintained. Due to the nature of the system, the unit can be fully operational from any one of the three positions below. The mounting plate of the system is designed to allow the safe operation of the unit from all positions, but this must be kept clear to the edge of the plate for correct access and use.
Please refer to the diagram below when siting or installing the unit.



OPERATING INSTRUCTIONS / INITIAL SETUP PROCEDURE

WARNING: BE CERTAIN HEAD, HANDS AND ARMS ARE CLEAR OF ASCENDING AND DESCENDING LIFT. Refer to OPERATING & SAFETY PRECAUTIONS on page 3.



EXHAUST SPEED CONTROLS: These meter the flow of air from the valve exhaust ports. The rate of rise or descent of the lift may be increased or decreased by adjusting the screw. The adjusted position can then be locked in place by a lock nut.

TO RAISE LIFT (FIRST TIME)

1. Take note of the pump / drum clearance above. If additional clearance is needed to clear the drum, lower the lift, loosen the Vertical Arm (15) bolts, turn the Vertical Arm Adjustment Nut and re-tighten the (15) bolts.
2. Connect the air supply (150 psi MAX) to the air inlet.
3. Shift the Control Valve Lever to the “up” position. Be certain the lift is clear of any objects above. Also refer to OPERATING & SAFETY INSTRUCTIONS found on page 3.
4. Raise the lift high enough to clear the height of the drum. Stop the lift upward travel by moving the Control Valve Lever to the NEUTRAL (centre) position.

TO RAISE LIFT (NORMAL OPERATION)

1. **If a vent plug is part of your Follower Plate setup,** remove the Follower Plate vent plug to prevent a build up of vacuum when raising the follower plate.
2. **If there is no vent plug,** Adjust the Air Valve pressure up to approximately 8 psi/g. DO NOT OVERPRESSURISE THE DRUM to avoid damage.
3. Shift the Control Valve Lever to the UP position.
4. Raise the lift high enough to clear the height of the drum. Stop the lift upward travel by moving the Control Valve Lever to the NEUTRAL (centre) position.

TO CHANGE DRUMS:

NOTE: The raised lift control valve should be in the NEUTRAL position.

1. Place a new drum into position or rotate the lift and pump to the next drum position.

TO LOWER LIFT:

WARNING!

STAND CLEAR: When raising or lowering the lift. Read the warning on page 2.

PINCH HAZARD: Follower can descend quickly causing injury. Keep hands clear when aligning with container. Read the warning on page 2.

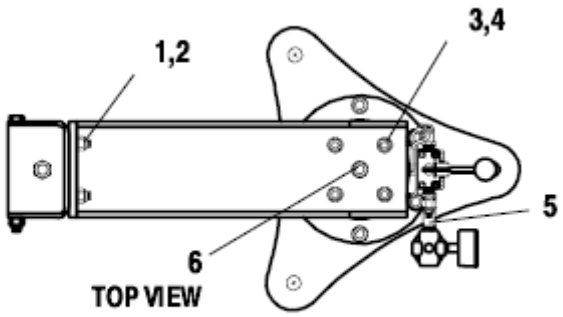
NOTE: When follower plate lowers into drum be certain the Follower Plate vent plug has been removed (if applicable) so that the air trapped between the follower and the material is allowed to escape.

NOTE: The lift may hesitate momentarily before starting downward, the air pressure inside the post air chamber must decrease before it will begin to descend.

1. Shift the Control Valve Lever to the DOWN position and proceed to lower the pump.
2. Replace the vent plug (if applicable).

PLEASE REFER TO THESE DIAGRAMS FOR TROUBLESHOOTING AND SPARES PROCUREMENT

Item	Description	(Qty)	Part No.
1	Screw	(8)	Y6-65-C
2	Stop nut, elastic	(8)	Y108-3-Z
3	Socket head screw	(4)	Y99-61
4	Lock washer	(4)	Y14-616
5	Nipple	(1)	Y44-12-C
6	Socket head screw	(1)	Y99-83
7	Bracket assy.	(1)	67071-4
8	Inner tube assy.	(1)	67071-8
9	Rod assy.	(1)	67071-7
10	Nut	(1)	Y12-112-C
11	Air line tubing ◯	(1)	44632-( )
12	Cylinder ★	(1)	AP1009370
13	Outer tube assy.	(1)	67071-6
14	Vertical adj. bracket assy.	(1)	67071-3
15	Bolt	(2)	- - - - - -
16	Face bushing	(2)	93948-29
17	Air line fitting	(2)	93948-30
18	Air line tubing ◯	(1)	44632-( )
19	Socket head screw	(6)	Y99-82
20	Clevis pin	(1)	5814
21	Clip retainer	(2)	Y180-43
22	Mounting plate	(1)	67071-5
23	Straight A'line fitting	(4)	59688-4
24	Directional decal	(1)	92449
25	Exhaust speed control	(2)	20313-2
26	Air line guage	(1)	29850
27	Air line regulator	(1)	127122-000
28	"E" series 4-way valve ▪▪	(1)	E512LM
29	Air line tubing ◯	(2)	44632-( )
30	90° Legris fitting	(2)	59745-154
31	Screw	(3)	Y6-46-C
32	Decal, pinch warning	(1)	93922
▪▪	Repair kit available for Valve		116722
★	Repair kit available for Cylinder		RK2425
◯	Bulk tubing		59690-104



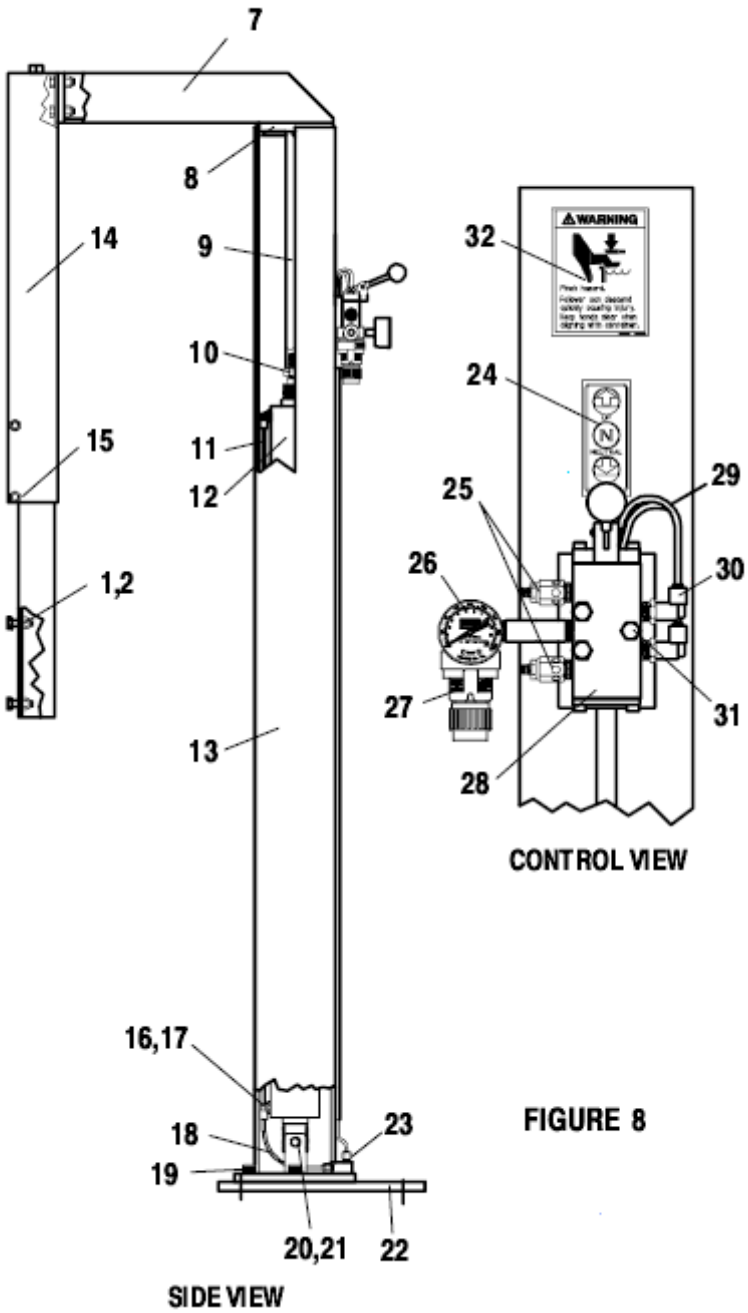
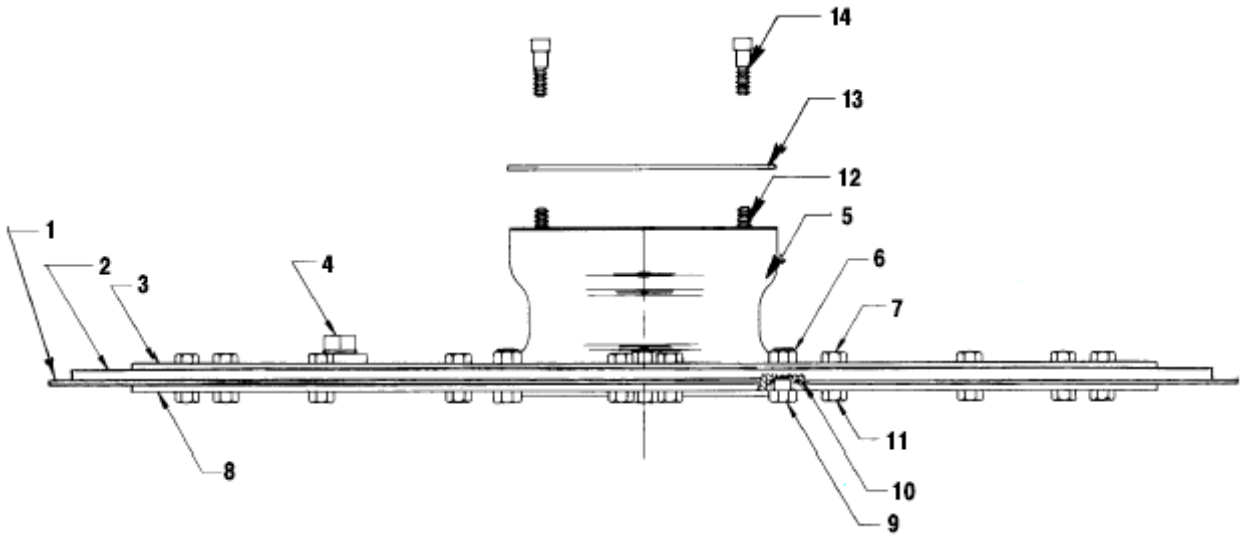


FIGURE 8

PLEASE REFER TO THESE DIAGRAMS FOR TROUBLESHOOTING AND SPARES PROCUREMENT

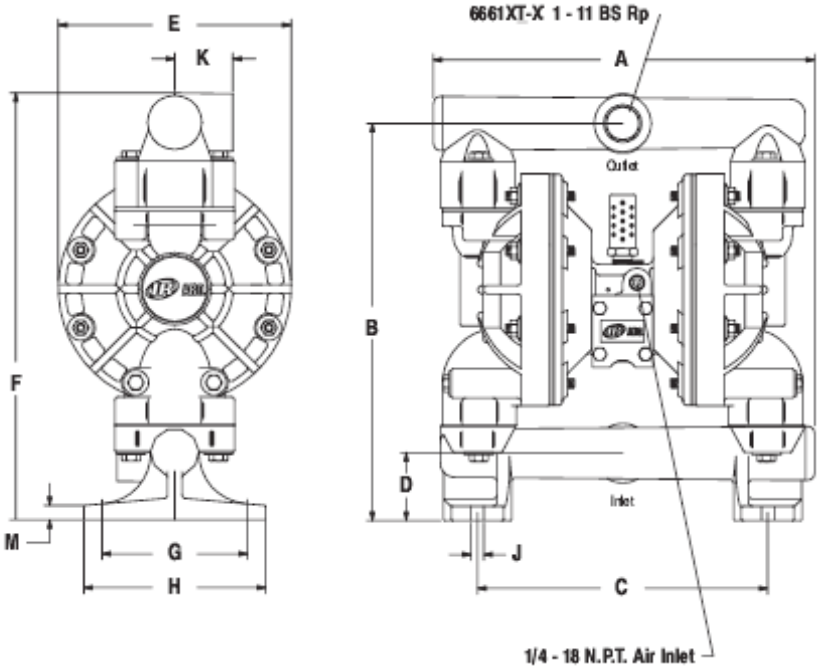


Item	Description	(Qty)	Part No.
1	Follower seal	(1)	91060
2	Backup washer	(1)	92035
3	Follower Ring	(4)	90725
4	Pipe plug	(1)	Y17-13-C
5	Adaptor	(1)	91751
6	Nut	(6)	Y12-5-C
7	Nut	(20)	Y12-4-C

Item	Description	(Qty)	Part No.
8	Follower plate welding assy.	(1)	66247
9	Cap screw	(6)	Y6-54-C
10	Gasket	(1)	91742
11	Cap screw	(20)	Y6-43-C
12	Stud	(2)	91263
13	Gasket	(1)	90552
14	Screw	(4)	Y99-63-C

PUMP DIMENSIONAL DATA

DIMENSIONS SHOWN ARE FOR GUIDANCE ONLY AND ARE DISPLAYED IN MILIMETRES AND (INCHES)



	6661XT-X
A	13-5/32" (334 mm)
B	13-25/32" (350 mm)
C	10-1/16" (255 mm)
D	2-11/32" (59 mm)
E	8-1/16" (204 mm)
F	14-13/16" (376 mm)
G	5-1/32" (128 mm)
H	6-9/32" (160 mm)
J	7/16" (11 mm)
K	2" (51 mm)
L	
M	1/2" (13 mm)
N	

TROUBLESHOOTING

Ram system will not lift

- Check air supply.
- Check control valve connections
- Ensure you have adequate clearance for the ram system to lift.
- *If you have a vent plug in your Follower Plate*, remove or loosen it and retry
- *If you do not have a vent plug on your Follower Plate*, adjust the air valve pressure, located close to the Control Valve Lever, to approx 8 psi/g (0.55 bar) and retry

Product discharged from exhaust outlet

- Check for diaphragm rupture.
- Check tightness of diaphragm nut.

Air bubbles in product discharge

- Check connections of suction plumbing.
- Check "O" rings between intake manifold and fluid caps.
- Check tightness of diaphragm nut.

Low output volume, erratic flow or no flow

- Check air supply.
- Check for plugged outlet hose.
- Check for kinked (restrictive) outlet material hose.
- Check for pump cavitation - suction pipe should be sized at least as large as the inlet thread diameter of the pump for proper flow if high viscosity fluids are being pumped. Suction hose must be non-collapsing type, capable of pulling a high vacuum.
- Check all joints on the inlet manifolds and suction connections. These must be air tight.
- Inspect the pump for solid objects logged in the diaphragm chamber or valve seat area.

If any of the above measures fail to lift your ram system or get you pumping again, please do not hesitate to contact Air Pumping Engineering Services for further information or to arrange a service visit